

(51) International Patent Classification ⁵ : G02B 27/00, A61B 3/113		A3	(11) International Publication Number: WO 93/18428 (43) International Publication Date: 16 September 1993 (16.09.93)															
(21) International Application Number: PCT/US93/02312 (22) International Filing Date: 12 March 1993 (12.03.93) (30) Priority data: <table border="0"> <tr> <td>07/851,178</td> <td>13 March 1992 (13.03.92)</td> <td>US</td> </tr> <tr> <td>07/874,588</td> <td>24 April 1992 (24.04.92)</td> <td>US</td> </tr> <tr> <td>07/971,352</td> <td>4 November 1992 (04.11.92)</td> <td>US</td> </tr> <tr> <td>07/985,285</td> <td>4 December 1992 (04.12.92)</td> <td>US</td> </tr> <tr> <td>PCT/US93/01322</td> <td>12 February 1993 (12.02.93)</td> <td>WO</td> </tr> </table> (34) Countries for which the regional or international application was filed: US et al.		07/851,178	13 March 1992 (13.03.92)	US	07/874,588	24 April 1992 (24.04.92)	US	07/971,352	4 November 1992 (04.11.92)	US	07/985,285	4 December 1992 (04.12.92)	US	PCT/US93/01322	12 February 1993 (12.02.93)	WO	(72) Inventors; and (75) Inventors/Applicants (for US only) : SPITZER, Mark, B. [US/US]; 2 Mink Trap Road, Sharon, MA 02067 (US). GALE, Ronald [US/US]; 1 Old Wolomolopoag Road, Sharon, MA 02067 (US). JACOBSEN, Jeffrey [US/US]; 501 Tevis Trail, Hollister, CA 95023 (US). (74) Agents: HOOVER, Thomas, O. et al.; Hamilton, Brook, Smith & Reynolds, Two Militia Drive, Lexington, MA 02173 (US). (81) Designated States: CA, JP, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).	
07/851,178	13 March 1992 (13.03.92)	US																
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PCT/US93/01322	12 February 1993 (12.02.93)	WO																
(60) Parent Application or Grant (63) Related by Continuation <table border="0"> <tr> <td>US</td> <td>07/851,178 (CIP)</td> </tr> <tr> <td>Filed on</td> <td>13 March 1992 (13.03.92)</td> </tr> </table> (71) Applicant (for all designated States except US): KOPIN CORPORATION [US/US]; 695 Myles Standish Boulevard, Taunton, MA 02780 (US).		US	07/851,178 (CIP)	Filed on	13 March 1992 (13.03.92)	Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 17 February 1994 (17.02.94)												
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A head-mounted display system including a high resolution active matrix display which reduces center of gravity offset in a compact design. The active matrix display can be either a liquid crystal display or a light emitting display.

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INTERNATIONAL SEARCH REPORT

Int'l Application No

PCT/US 93/02312

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 5 G02B27/00 A61B3/113

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 5 G02B A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP,A,0 408 344 (GEC-MARCONI) 16 January 1991	23-25,27
A	see abstract; figure 6 see column 5, line 8 - line 41	19,20,28
Y	WO,A,91 04508 (GENERAL ELECTRIC COMPANY) 4 April 1991	1
A	see abstract see page 3, line 16 - line 19; figures 1A,1B,2 see page 6, line 19 - line 24 see page 8, line 12 - line 28 see page 9, line 26 - line 30	4,6,8, 12,19
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

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- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

21 December 1993

Date of mailing of the international search report

21. 01. 94

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Soulaire, D

INTERNATIONAL SEARCH REPORT

Int ional Application No

PCT/US 93/02312

C(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	DE,A,27 15 446 (SIEMENS) 12 October 1978 see page 4, line 5 - line 10 see page 5, line 1 - line 4 see page 9, line 1 - line 5 see claims 1,2,8,10,11; figures ---	1 5,8, 11-15, 17,18
Y A	US,A,4 361 384 (BOSSERMAN) 30 November 1982 see column 2, line 36 - line 50 see column 4, line 5 - line 8; figure 4 see column 4, line 62 - line 66 see claim 1 ---	1 7,12,19
Y A	PATENT ABSTRACTS OF JAPAN vol. 9, no. 173 (E-329) & JP,A,60 046 019 (MATSUSHITA) 12 March 1985 see abstract ---	1 5,7,8,12
Y A	JOURNAL OF ELECTRONIC ENGINEERING vol. 21, no. 212, August 1984 pages 57 - 61 MATSUDA 'THE LCD CHALLENGE TO CATHODE RAY TUBES' see page 57 ---	1 6,8,12
Y A	US,A,4 181 405 (COHEN) 1 January 1980 see column 2, line 30 - line 40; figure 1 see column 3, line 63 - line 65 see column 5, line 3 - line 21 ---	1 8,10,12
Y A	PATENT ABSTRACTS OF JAPAN vol. 14, no. 16 (E-872) & JP,A,01 259 580 (SEIKO) 17 October 1989 see abstract ---	1 5,10
Y A	US,A,4 568 159 (BALDWIN) 4 February 1986 see column 1, line 34 - line 39 see column 2, line 11 - line 14 see column 2, line 46 - line 56; figure ---	14 17,24, 27,30
Y A	US,A,3 967 253 (TSURUISHI) 29 June 1976 see column 1, line 20 - line 59 see column 3, line 19 - column 4, line 13; figures 1,3 see column 4, line 42; figure 5 ---	14 8,11,12, 17,22,30
4 1 A	FR,A,2 612 351 (WITZIG) 16 September 1988 see abstract see page 2, line 13 - line 15; figure ---	1,8,12

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INTERNATIONAL SEARCH REPORT

Int ional Application No

PCT/US 93/02312

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 3, no. 115 (E-140) & JP,A,54 093 378 (FUJITSU) 24 July 1979 see abstract ---	1,9,10
A	FR,A,2 522 804 (THOMSON) 9 September 1983 see page 2, line 23 - line 26 see page 4, line 12 - line 35; figure 1 see page 6, line 15 - page 7, line 3; claims 1,2 see page 8, line 33 - page 9, line 5; figure 7 ---	11,13, 19,23, 24,27
A	APPLIED PHYSICS LETTERS vol. 53, no. 7, 15 August 1988 pages 598 - 599 AHRENKIEL R K 'MINORITY-CARRIER LIFETIME IN GaAs THIN FILMS' see abstract see page 598, column 1, paragraph 2 ---	16
A	US,A,4 852 988 (VELEZ) 1 August 1989 see abstract see column 10, line 47 - column 11, line 34; figures 1,2 ---	19-21, 23-29
A	US,A,4 028 725 (LEWIS) 7 June 1977 cited in the application see abstract see column 4, line 37 - line 42; figure 3 see column 5, line 23 - line 43 ---	14,23, 24,27,30
A	US,A,4 109 145 (GRAF) 22 August 1978 cited in the application see abstract see column 3, line 41 - line 50; figure 1 ---	23,27
A	US,A,4 034 401 (MANN) 5 July 1977 cited in the application see abstract; figure 3 -----	19,24,27

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 93/02312

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. Claims 1-13
2. Claims 14-30

For further information please see form 206 mailed 27.09.93.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. Application No

PCT/US 93/02312

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A-0408344	16-01-91	JP-A- 3101709 US-A- 5093567	26-04-91 03-03-92
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DE-A-2715446	12-10-78	NONE	
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US-A-4568159	04-02-86	NONE	
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US-A-4028725	07-06-77	NONE	
US-A-4109145	22-08-78	NONE	
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